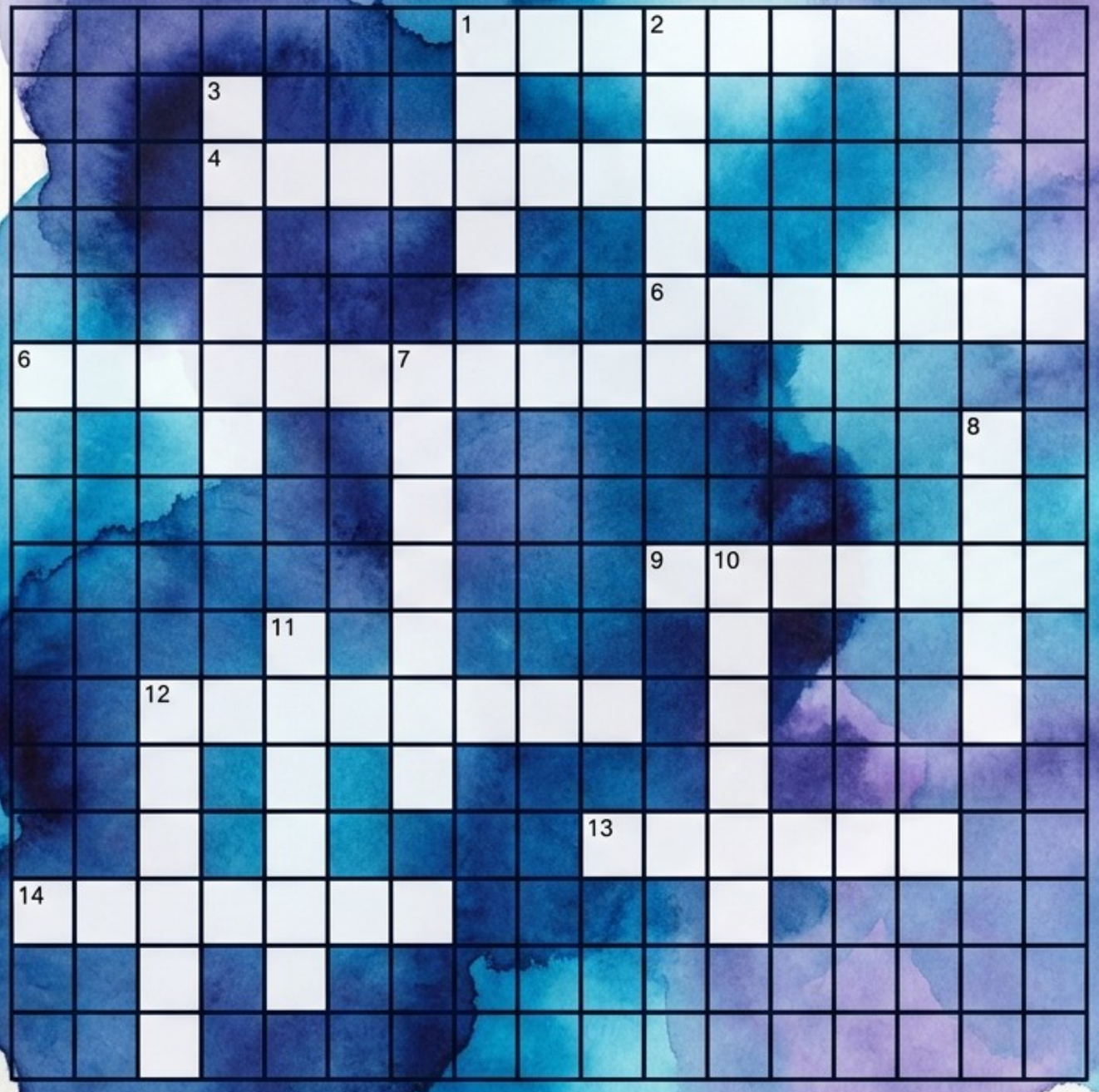
Chapter 8: Journey Inside the Atom

Play & Learn — Interactive Smart Board Challenges

NotebookLM



ACROSS

2. _____ number — the count of protons in a nucleus (6)
4. a radioactive isotope of hydrogen with two neutrons (7)
5. an energy level in which electrons orbit (5)
8. spontaneous emission of radiation from unstable nuclei (13)
9. Bohr's _____ states — fixed orbits where electrons do not radiate energy (10)
12. a negatively charged particle orbiting the nucleus (8)
14. atoms of the same element with different neutron numbers (7)

DOWN

1. the combining capacity of an atom (7)
3. the simplest isotope of hydrogen, with no neutrons (7)
6. nickname for Thomson's plum-pudding style model (10)
7. Rutherford's alpha-particle _____ experiment (10)
10. an uncharged particle in the nucleus (7)
11. the dense, positively charged centre of an atom (7)
13. a positively charged particle in the nucleus (6)

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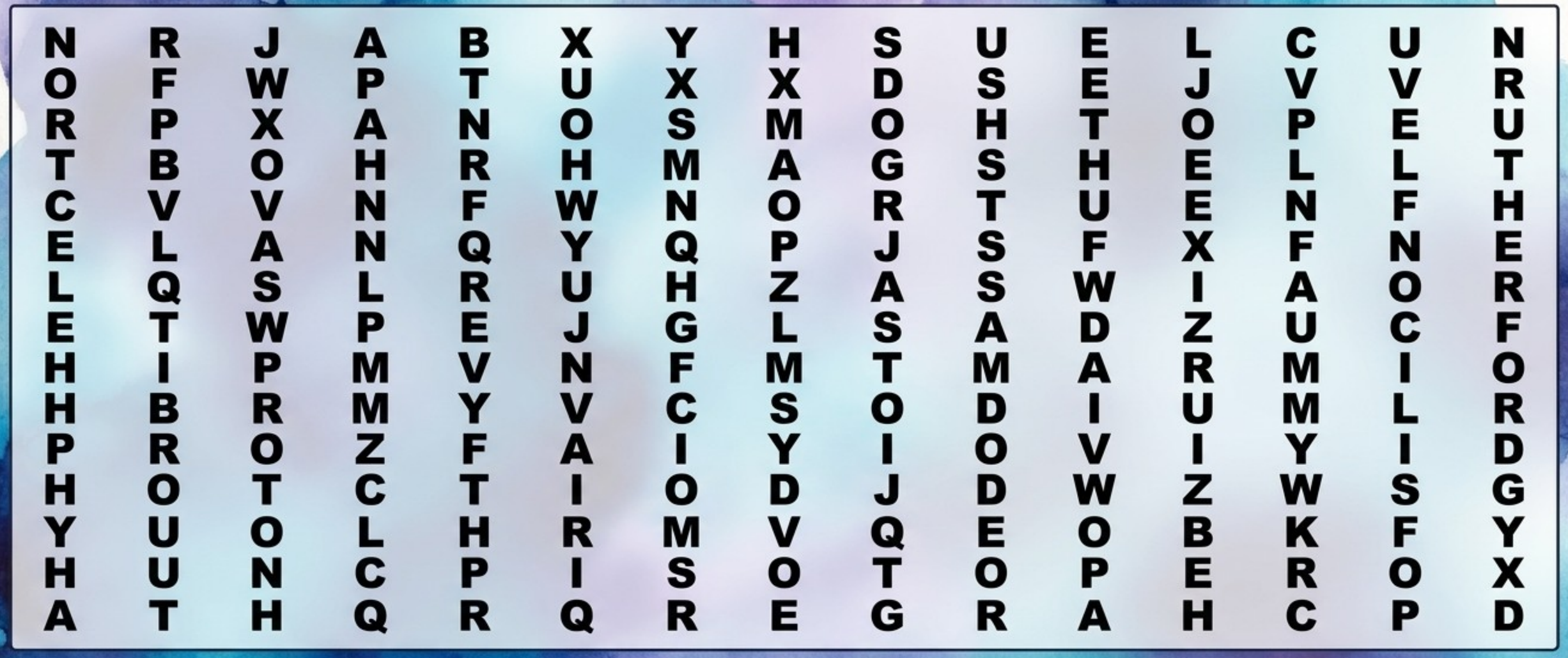
N R J A B X Y H S U E L C U N
O F W P T U X X D S E J V V R
R P X A N O S M O H T O P E U
T B O H R H M A G S H E L L T
C V V A N F W O R T S E E N H
E L A N Q Y Q P J S F X F N E
L Q S L R U H Z A S W I A O R
E T W P E J G L S A Z U C F
H I P M V N F M T M A R M I O
H B R M Y V C S O D U M L R
P R O Z F A I Y D I O I Y I D
H O T C T I O J D W Z W S G
Y U O L H R M V Q E B K F Y
H U N C P I S O T O P R O X
A T H Q R Q R E G R A H C P D

- ☐ RUTHERFORD
- ☐ ELECTRON
- ☐ NUCLEUS
- ☐ NEUTRON
- ☐ ISOTOPE
- ☐ VALENCY
- ☐ THOMSON
- ☐ SILICON
- ☐ PROTON
- ☐ CHARGE
- ☐ SODIUM
- ☐ SHELL
- ☐ ORBIT
- ☐ BOHR
- ☐ ATOM
- ☐ MASS

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1. **I Y O R D I T A V A T C I**

2. **C T G T I A R N S E**

3. **I R N A T A O S T Y**

4. **T E I P S O O**

5. **A E N E C V L**

6. **A T A R L P Y E N**

7. **C O A T M B U S I**

8. **R A E N L C U**

(spontaneous emission of radiation from unstable nuclei) ___

(Rutherford's alpha-particle ___ experiment) _____

(Bohr's ____ states, where electrons do not lose energy) ____

(same element, different number of neutrons) _____

(____ shell — the outermost electron shell) _____

(Rutherford's ____ model of the atom) _____

(particles smaller than the atom, like protons and electrons)

(____ charge — the positive charge concentrated in the nucleus)

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[Proton]	[Neutron]	[Electron]	[Molecule]	Because...
[Thomson]	[Rutherford]	[Bohr]	[Tyndall]	Because...
[Protium]	[Deuterium]	[Tritium]	[Helium]	Because...
[Positive]	[Negative]	[Neutral]	[Purple]	Because...
[Shell]	[Orbit]	[Valency]	[Sublimation]	Because...
[Watermelon model]	[Plum pudding model]	[Planetary model]	[Solar panel]	Because...

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You did this	Points
Each letter tile used	Its tile value
Word is a term from this chapter	× 2
Word is 8 letters or longer	+ 10 bonus
You can state its meaning correctly	+ 5
You can connect it to a real-life example	+ 3
Word is not in this chapter (challenged and lost)	− 5

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① I am the dense centre of an atom.
② I hold protons and neutrons.
③ I am the nucleus.

① I carry a positive charge.
② I live inside the nucleus.
③ I am a proton.

① I carry no charge at all.
② I also live inside the nucleus.
③ I am a neutron.

① I carry a negative charge.
② I orbit the nucleus in shells.
③ I am an electron.

① I fired alpha particles at gold foil.
② Most passed through, but a few bounced back, revealing the nucleus.
③ I am Ernest Rutherford.

① I fired alpha particles at gold foil.
② Most passed through, but a few bounced back, revealing the nucleus.
③ I am Ernest Rutherford.

① I proposed that electrons occupy fixed orbits without losing energy.
② My orbits are called stationary states.
③ I am Niels Bohr.

① I proposed a positively charged sphere with embedded embedded electrons.
② My model is nicknamed watermelon or plum pudding.
③ I am J.J. Thomson.

① I proposed a positively charged sphere with embedded electrons.
② My model is nicknamed watermelon or plum pudding.
③ I am J.J. Thomson.

① I am an energy level electrons occupy.
② K, L, M and N are examples of me.
③ I am a shell.

① I am the combining capacity of an atom.
② Sodium has one of me; oxygen has two.
③ I am valency.

① I am the spontaneous emission of radiation from unstable nuclei.
② I was central to a whole new field of physics.
③ I am radioactivity.

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1. The nucleus is negatively charged. [TRUE] [FALSE]
2. Protons and neutrons are both found in the nucleus. [TRUE] [FALSE]
3. Electrons orbit the nucleus in shells. [TRUE] [FALSE]
4. Rutherford’s gold-foil experiment led to the discovery of the nucleus. [TRUE] [FALSE]
5. Bohr proposed that electrons lose energy continuously while orbiting. [TRUE] [FALSE]
6. Isotopes of an element have the same number of protons. [TRUE] [FALSE]
7. Isotopes of an element always have the same number of neutrons. [TRUE] [FALSE]
8. Valency describes an atom’s combining capacity. [TRUE] [FALSE]
9. Thomson’s model is nicknamed the watermelon or plum pudding model. [TRUE] [FALSE]
10. Radioactivity is the spontaneous emission of radiation from unstable nuclei. [TRUE] [FALSE]
11. Protium has one neutron. [TRUE] [FALSE]
12. The atomic number equals the number of protons. [TRUE] [FALSE]
13. An electron has more mass than a proton. [TRUE] [FALSE]
14. Most of an atom’s mass is concentrated in the nucleus. [TRUE] [FALSE]

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Nucleus
Proton
Neutron
Electron
Isotope
Valency
Shell
Radioactivity
Rutherford
Thomson
Bohr
Protium
Tritium
Stationary states
Atomic number
Scattering

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Set 1

- ◯ (a) Protons are positive.
- ◯ (b) Neutrons are positive.
- ◯ (c) Electrons are negative.

Correct the lie: _____

Set 2

- ◯ (a) Rutherford discovered the nucleus.
- ◯ (b) Thomson proposed the plum-pudding model.
- ◯ (c) Bohr discovered the electron.

Correct the lie: _____

Set 3

- ◯ (a) Isotopes have the same number of protons.
- ◯ (b) Isotopes have the same number of neutrons.
- ◯ (c) Isotopes are atoms of the same element.

Correct the lie: _____

Set 4

- ◯ (a) The nucleus contains protons and neutrons.
- ◯ (b) The nucleus contains electrons too.
- ◯ (c) The nucleus is positively charged overall.

Correct the lie: _____

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GATE 1 — The Particle Gate:

How many types of subatomic particles are covered in this chapter (proton, neutron, electron)? Use that number.

GATE 2 — The Isotope Gate:

Protium has 0 neutrons, deuterium has 1, tritium has 2. Use the tritium number.

GATE 3 — The Model Gate:

How many atomic models are named in this chapter (Thomson, Rutherford, Bohr)? Use that number.

GATE 4 — The Shell Gate:

Count the letters in SHELL.

GATE 5 — The Charge Gate:

How many types of electric charge exist (positive, negative, neutral)?

Use that number.

EXIT CODE:

[ ][ ][ ][ ][ ]

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